

Prepared	Lin Jun Yin	Product Specifications AN17831A	Ref No.	A-1
Checked	Ling Chia How		Total Page	9
Approved	Yasuo Higuchi		Page No.	1

Structure	Silicon Monolithic Bipolar IC
Appearance	SIL-12 Pins Plastic Package (FP-12S Power Type With Fin)
Application	Audio
Function	44W (6Ω) x 2ch BTL Power Amplifier Built-in Standby and Muting Features Incorporating Various Protection Circuits

Absolute Maximum Ratings					
No.	Item	Symbol	Ratings	Unit	Note
1	Storage Temperature	Tstg	-55 ~ +150	° C	
2	Operating Ambient Temperature	Topr	-25 ~ +75	° C	
3	Operating Ambient Pressure	Popr	1.013x10 ⁵ ±0.61x10 ⁵	Pa	
4	Operating Constant Acceleration	Gopr	9,810	m / s ²	
5	Operating Shock	Sopr	4,900	m / s ²	
6	Power Supply Voltage	Vcc	27	V	1
7	Power Supply Current	Icc	8.0	A	
8	Power Dissipation	PD	37.5	W	2

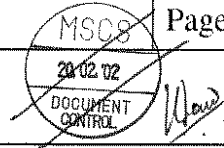
Operating Supply Voltage Range	Vcc	8.0 V ~ 26.5 V	3
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Note: 1) Without input signal, Vcc is up to 27V
2) Ta = 75°C with infinite heatsink
3) Vcc up to 26.5V can be used as long as the ratings of the IC are not exceeded

*5

Eff. Date	Eff. Date	Eff. Date	Eff. Date
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Prepared	<i>Handover</i>	Product Specifications AN17831A	Ref No.	B-1
Checked	<i>Kenneth Law</i>		Total Page	9
Approved	<i>Edg</i>		Page No.	2



B Electrical Characteristics < Vcc = 12V, RL = 4Ω, freq. = 1 kHz, 2 Channel Outputs > (Unless otherwise specified, the ambient temperature is 25°C±2°C)									
No.	Item	Symbol	Test Cct.	Condition	Limit			Unit	Note
					Min	Typ	Max		
1	Quiescent Circuit Current	Icq	1	Vin=0mV	-	150	300	mA	
2	Output Noise Voltage	Vno	1	Vin=0mV, Rg=20kΩ	-	0.27	0.5	mVrms	1
3	Voltage Gain	Gvc	1	Vin=20mV	38	40	42	dB	
4	Total Harmonic Distortion	THD	1	Vin=20mV	-	0.07	0.4	%	2
5	Maximum Output Power 1	Po1	1	THD=10%	12	15	-	W	
6	Maximum Output Power 2	Po2	1	VCC=24V, RL=6Ω, THD=10%	30	44	-	W	
7	Channel Balance	CB	1	Vin=20mV	-1	0	1	dB	
8	Channel Crosstalk	CT	1	Vin=20mV, Rg =20kΩ	55	70	-	dB	2
9	Output Offset Voltage	Voff	1	Rg=20kΩ	-350	0	350	mV	
10	Ripple Rejection	RR	1	Vr=1 Vrms, fr=120Hz, Rg=20kΩ	50	60	-	dB	1
11	Standby Current	I _{STB}	1	Vin=0mV	-	1	10	μA	
12	Muting Effects	MT	1	Vin=20mV	70	80	-	dB	2

Note : 1) With a filter band 20Hz ~20kHz (12 dB/OCT) used.
2) With a filter band 400Hz ~30kHz used.

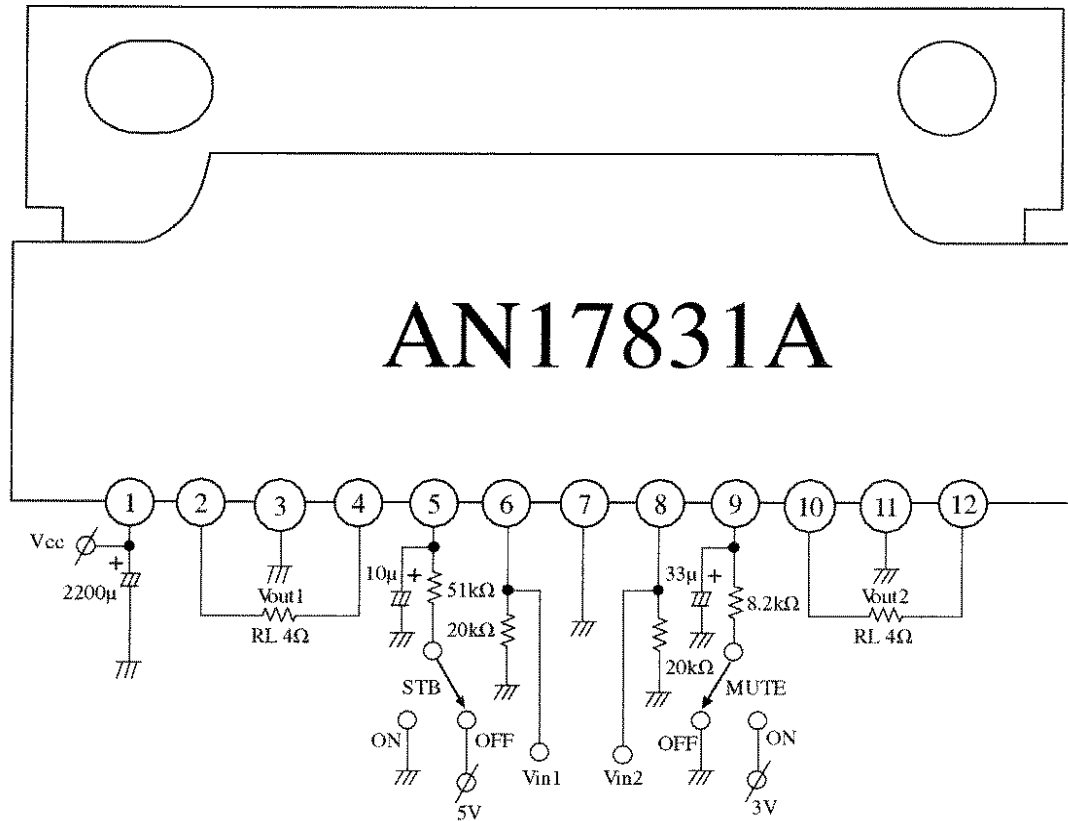
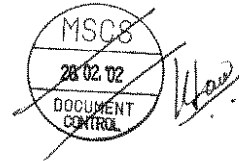


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18-FEB-2002	01-JUL-2004		

Prepared	<i>[Signature]</i>	Product Specifications AN17831A	Ref No.	C-1
Checked	<i>[Signature]</i>		Total Page	9
Approved	<i>[Signature]</i>		Page No.	3

Description of Test Circuits and Test Methods

[Test Circuit 1]

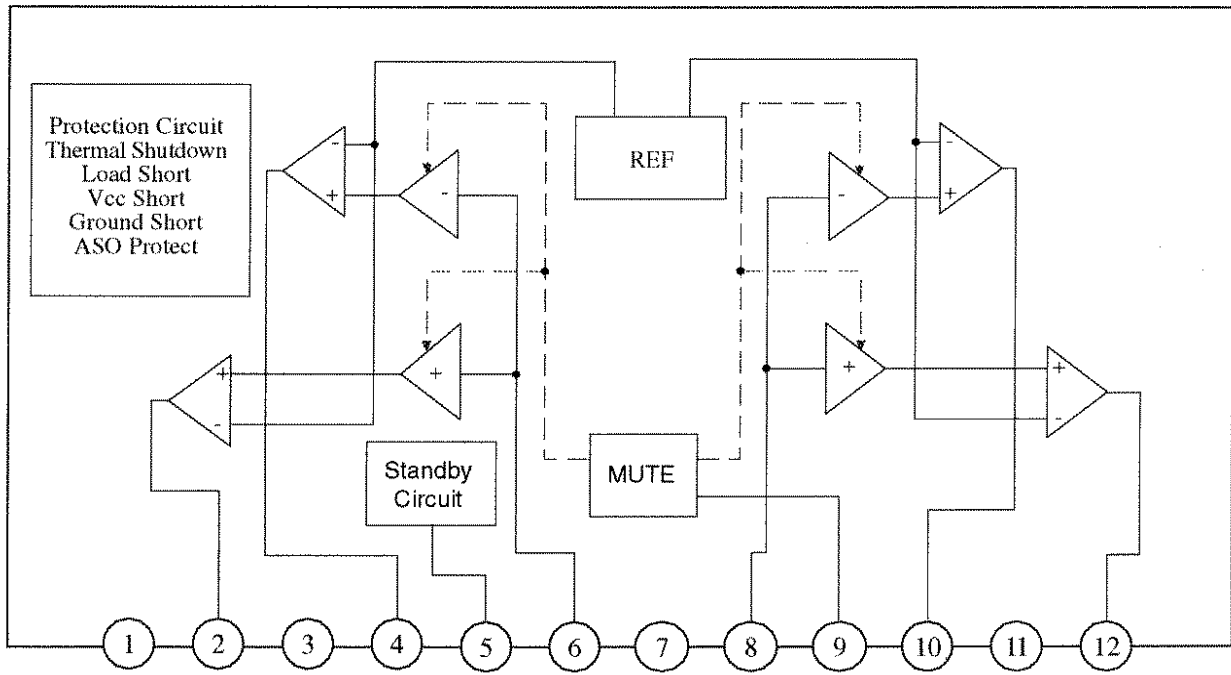
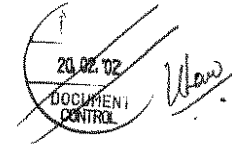


Note : * STB 'OFF' means 5V
MUTE 'OFF' means 0V.

Eff. Date	Eff. Date	Eff. Date	Eff. Date
18-FEB-2002	01-JUL-2004		

Prepared	<i>[Signature]</i>	Product Specifications AN17831A	Ref No.	D-1
Checked	<i>Kenneth Law</i>		Total Page	9
Approved	<i>[Signature]</i>		Page No.	4

Circuit Function Block Diagram



Pin Descriptions

Pin No.	Pin Descriptions	Pin No.	Pin Descriptions
1	Vcc	7	Pre GND
2	Ch1 +ve Phase Output	8	Ch2 Input
3	Ch1 Output GND	9	Mute
4	Ch1 -ve Phase Output	10	Ch2 -ve Phase Output
5	Standby	11	Ch2 Output GND
6	Ch1 Input	12	Ch2 +ve Phase Output

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18-FEB-2002	01-JUL-2004		

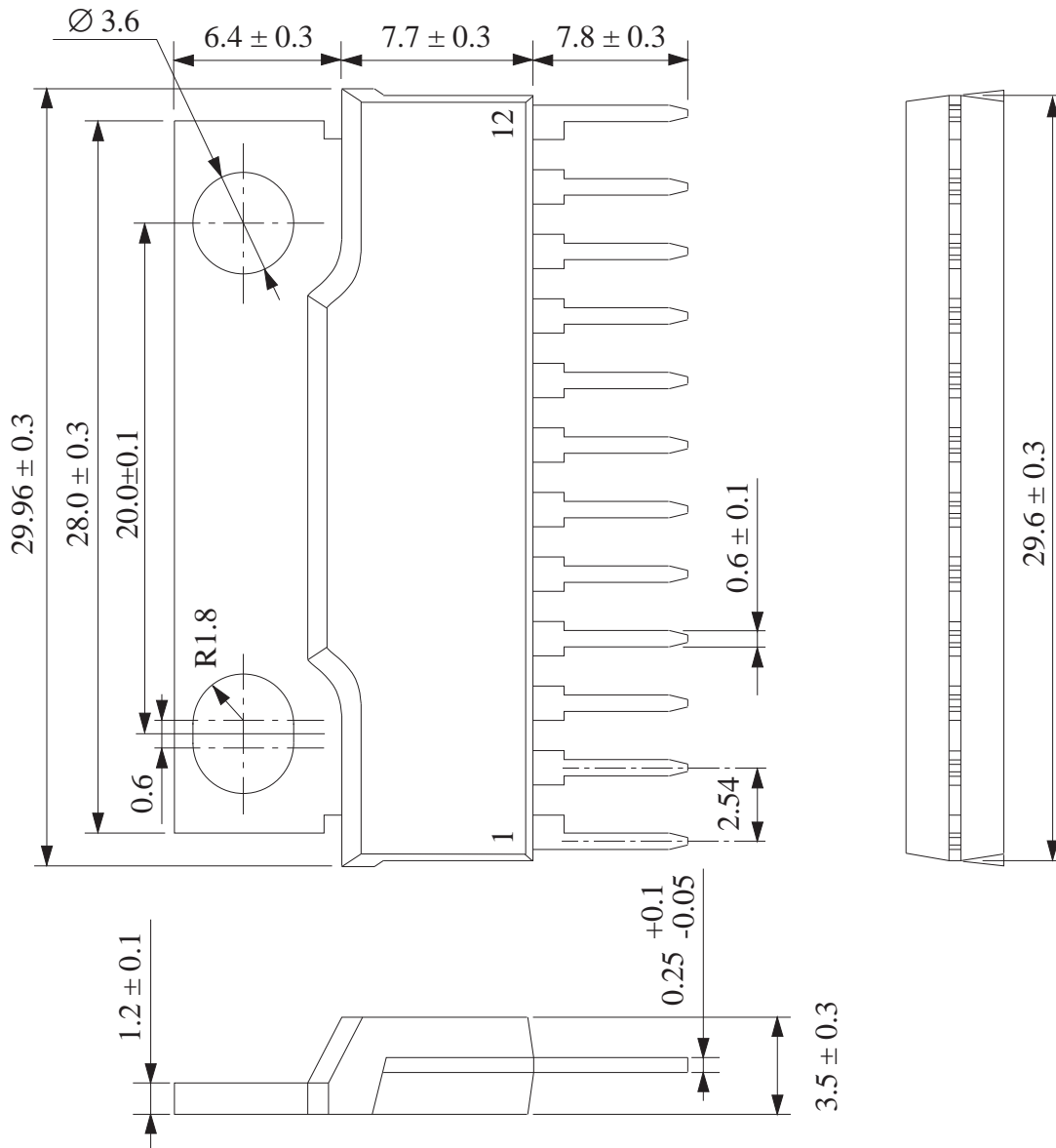
Prepared	Lim Fuey Sheen	Product Specifications AN17831A	Ref No.	E
Checked	Kenneth Law		Total Page	9
Approved	Yasuo Higuchi		Page No.	5

12-SIL(FP)

Package Name

FP-12S

Unit : mm



*4

Eff. Date	Eff. Date	Eff. Date	Eff. Date
28-MAR-05			

Prepared	Lim Fuey Sheen	Product Specifications (Leadfree) AN17831A	Ref No.	F-1
Checked	Kenneth Law		Total Page	9
Approved	Yasuo Higuchi		Page No.	6A

(Structure Description)

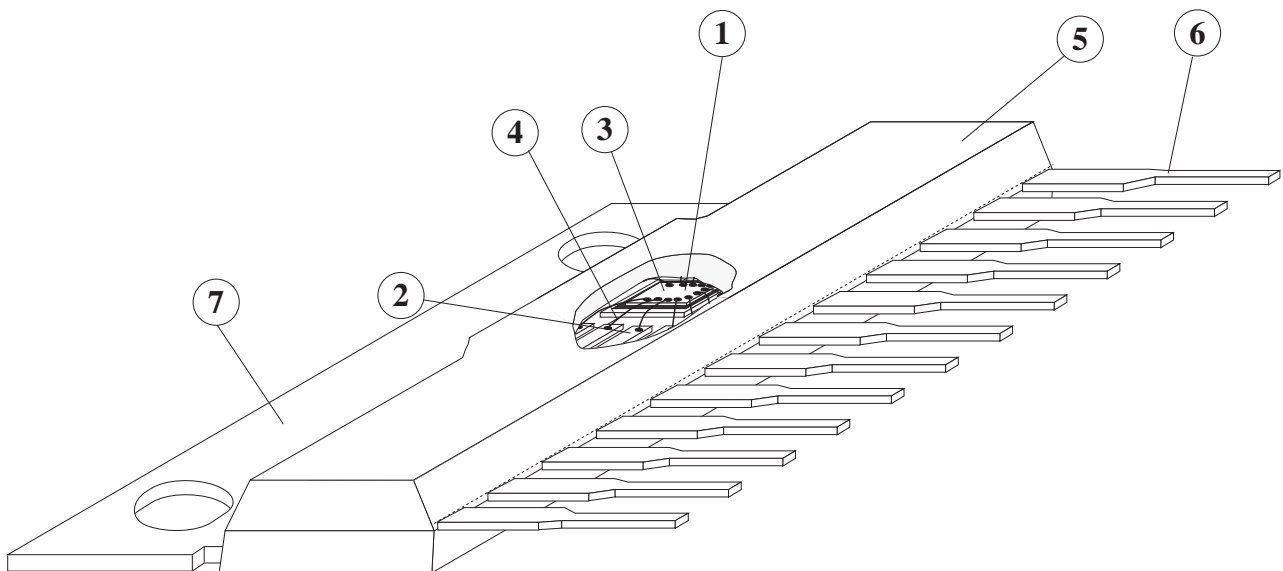
Chip surface passivation	SiN, PSG, Others ()	①
Lead frame material	Fe group, Cu group, Others ()	②, ⑥
Inner lead surface process	Ag plating, Au plating, Others ()	②
Outer lead surface process	Solder plating (98Sn-2Bi), Solder dip, Others ()	⑥
Chip mounting method	Ag paste, Au-Si alloy, Solder (95.5Pb-2.5Ag-2Sn)**	③
Wire bonding method	Thermalsonic bonding, Others ()	④
Wire material	Au, Others ()	④
Mold material	Epoxy, Others ()	⑤
Molding method	Transfer mold, Multiplunger mold, Others ()	⑤
Fin material	Cu group, Others ()	⑦

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Package FP-12S

**Under RoHS exemption clause, Lead (Pb) in high melting temperature type solder (i.e. tin-lead solder alloys containing more than 85% of lead), is exempted until 2010.

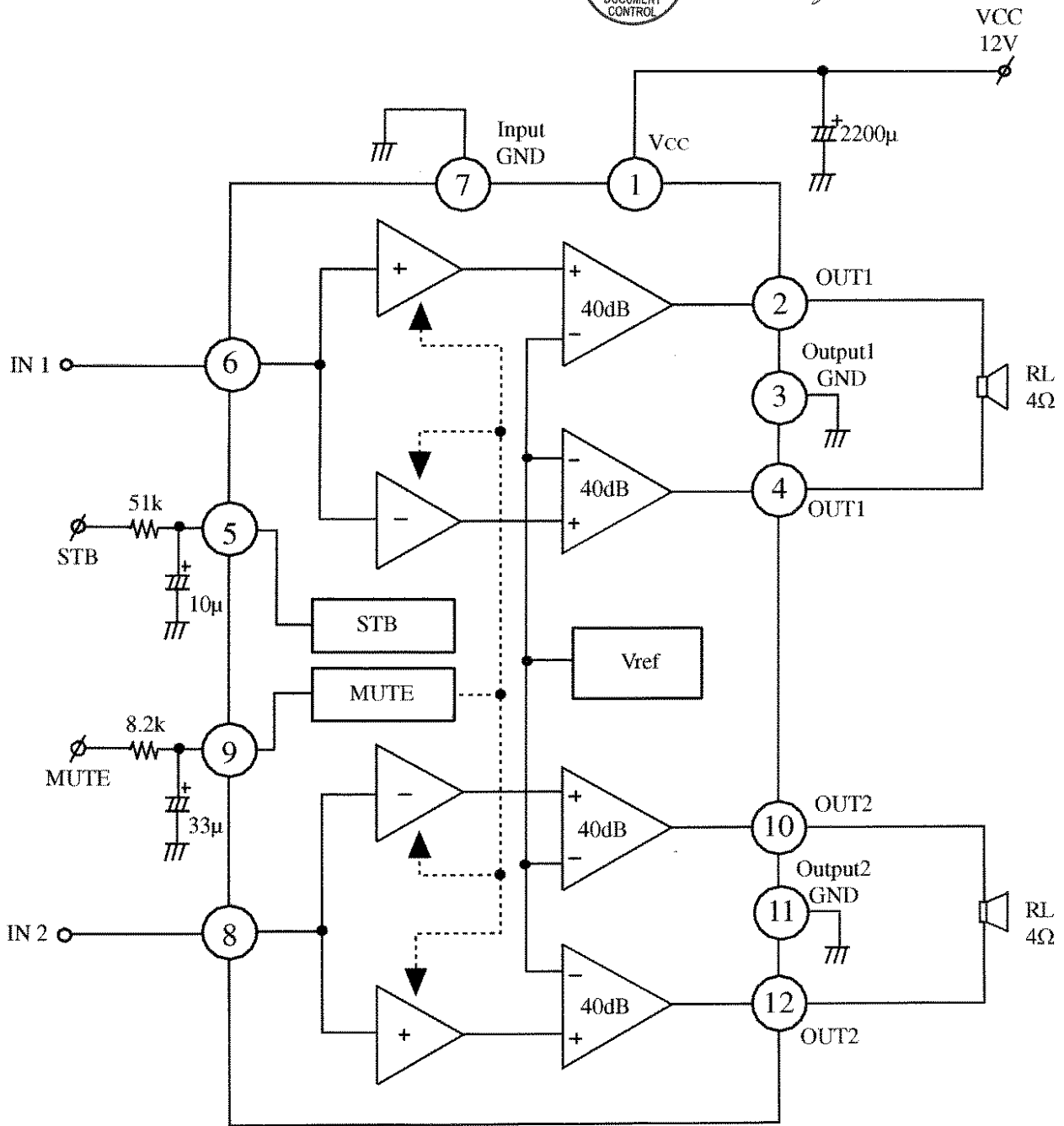
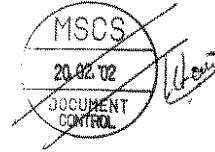


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Prepared	<i>Kollander</i>	Product Specifications AN17831A	Ref No.	G-1
Checked	<i>Kenneth Law</i>		Total Page	9
Approved	<i>Schiff</i>		Page No.	7

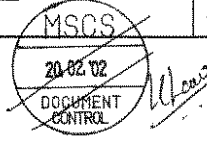
Application Circuit



STB 'OFF'	5V
STB 'ON'	0V
Mute 'OFF'	0V
Mute 'ON'	3V

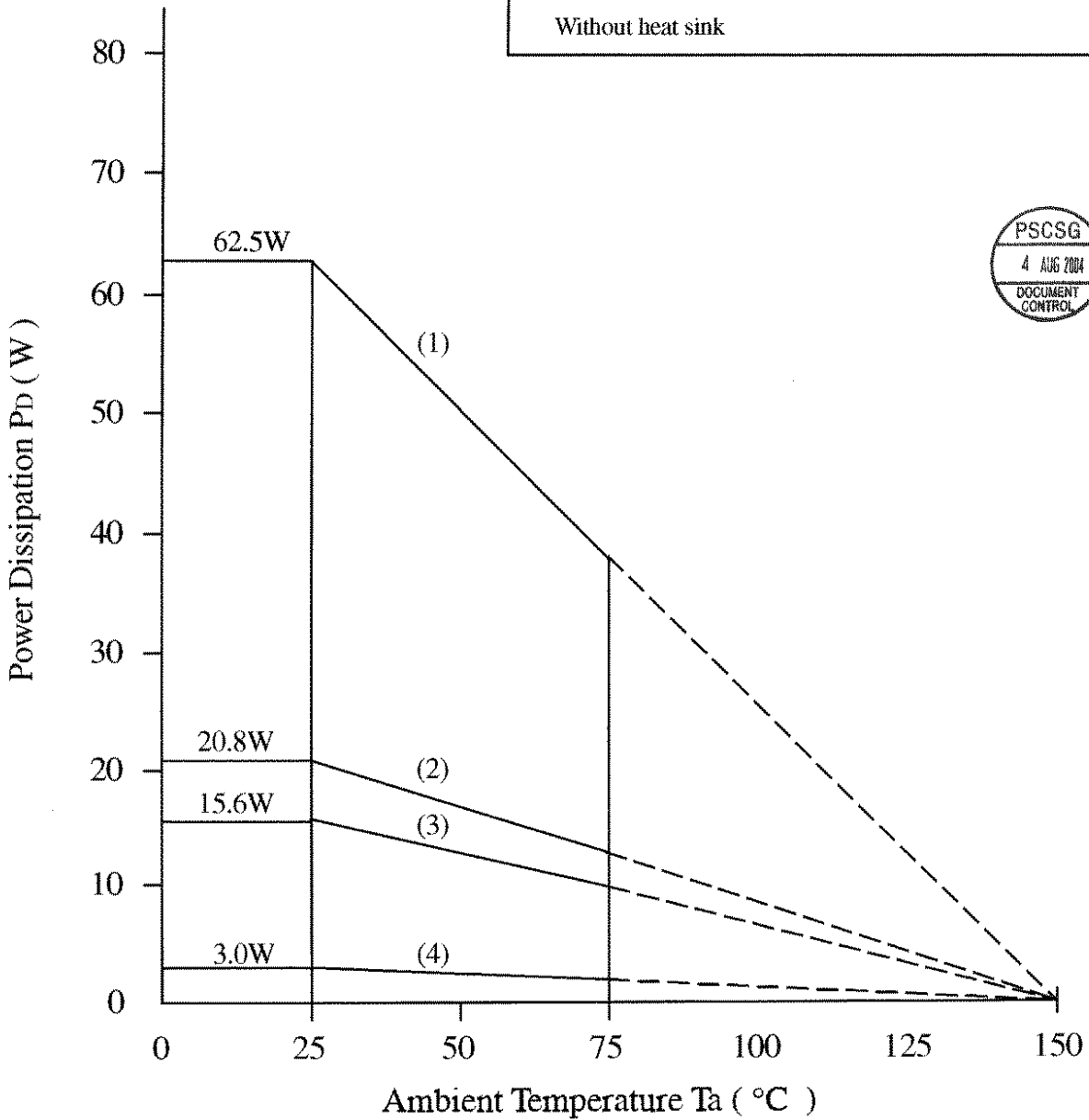
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Checked	<i>[Signature]</i>		Total Page	9
Approved	<i>[Signature]</i>		Page No.	8



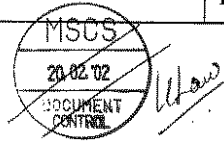
PD - Ta Curves

- (1) $T_c = T_a, 62.5W$ ($\theta_{j-c} = 2^\circ C/W$)
- (2) $20.83W$ ($\theta_f = 4.0^\circ C/W$)
With a $100cm^2 \times 3mm$ Al heat sink (black colour coated)
or a $200cm^2 \times 2mm$ Al heat sink (not lacquered)
- (3) $15.63W$ ($\theta_f = 6.0^\circ C/W$)
With a $100cm^2 \times 2mm$ Al heat sink (not lacquered)
- (4) $3.0W$ at $T_a = 25^\circ C$ ($\theta_{j-a} = 42^\circ C/W$)
Without heat sink



Eff. Date	Eff. Date	Eff. Date	Eff. Date
18-FEB-2002	01-JUL-2004		

Prepared	<i>[Signature]</i>	Product Specifications AN17831A	Ref No.	H-1
Checked	<i>Kenneth Law</i>		Total Page	9
Approved	<i>[Signature]</i>		Page No.	9



(Precautions for use)

- 1) Be sure to attach a heat sink to the IC before use. Make sure that the heat sink is secured to the chassis.
- 2) Ground the radiation fin so that there will be no difference in electric potential between the radiation fin and ground.
- 3) The thermal protection circuit operates at a T_j of approximately 150°C . The thermal protection circuit is reset automatically when the temperature drops.
- 4) The overvoltage protection circuit operates at a V_{cc} of approximately 28V.
- 5) Use a stabilised power supply with a 3V or higher standby voltage.

Eff. Date	Eff. Date	Eff. Date	Eff. Date	
18-FEB-2002	01-JUL-2004			